I claim as my invention:

1. The method of producing a family of elongated tubular golf club shafts of a predetermined length having the same longitudinal bending stiffness profiles and incremental differences in weights, including the steps of:

providing at least one elongated mandrel of circular cross-section longer than said predetermined length tapering along said taper profile from a larger butt-end portion to a smaller tip-end portion and sized to form the inside surfaces of a plurality of tubular shafts;

producing a first shaft in a first position on the mandrel relatively close to the tip end of the mandrel, by wrapping a first preselected weight of composite angle-fiber-and resin material around the mandrel to form a core of angle-fiber material for the first shaft, and wrapping a second preselected amount of composite longitudinal-fiber-and-resin material around the mandrel and said first are to form a first shell of longitudinal-fiber material for said first shaft for determining the stiffness profile of the first shaft;

producing at least a second shaft on the mandrel having a different weight and the same longitudinal stiffness by wrapping a second preselected weight of composite angle-fiber-and-resin material less than said first preselected weight by a preselected increment of weight around a different portion of the mandrel spaced a predetermined distance farther from the tip end of the mandrel to form a second core of angle-fiber-and-resin material of said second preselected weight for the second shaft, having a larger outside surface than the first core, and wrapping said second preselected amount of composite longitudinal-fiber-and-resin material around the mandrel and said first core to form a second shell of longitudinal-fiber-and-resin material for the second shaft for determining the stiffness profile of the second shaft, said predetermined distance being calculated to increase the outside surface of the second core to the same size as the first core, thereby to produce the same longitudinal stiffness profile for the second shaft.

2. The method as defined in claim 1 including the further steps pf producing additional shafts having cores of angle-fiber-and-resin composite materials of preselected incrementally lighter weights in spaced positions along said flex profile, and producing shells on said cores composed of longitudinal-fiber-and-resin composite material of said second preselected amounts and spaced along the taper profile predetermined distances calculated to maintain the outside surfaces of the cores at substantially the same outside size in each shaft, thereby to produce the same stiffness profile on each shaft and a weight that varies in accordance with the reduction in angle-fiber-and-resin materials.

3. The method as defined in claim 2 wherein the shafts are produced in nominal weights of approximately 55 grams, 65 grams, 75 grams, 85 grams, 95 grams and 105 grams.

4. The method as defined in claim 3 in which at least a second mandrel is used having a portion of substantially the same taper profile.

5. The method as defined in claim 1 wherein the steps of wrapping angle-fiber-and-resin materials to form the cores includes wrapping of at least two sheets of angle-fiber-and-resin material in each core, and the steps of wrapping longitudinal-fiber-and-resin materials to form the shells includes wrapping of at least two sheets of longitudinal-fiber-and-resin material in each shell.

6. The method as defined in claim 1 including the further steps of wrapping short sheets of angle-fiber-and-resin material around butt-end tip portions of the mandrel as reinforcing wraps on both shafts.

7. The method of producing a family of elongated tubular golf club shafts of a predetermined length having the same longitudinal bending stiffness profiles and incremental differences in weights, including the steps of:

providing at least one elongated mandrel of circular cross-section longer than said predetermined length tapering along said taper profile from a larger butt-end portion to a smaller tip-end portion and sized to form the inside surfaces of a plurality of tubular shafts;

producing a first shaft in a first position on the mandrel, by wrapping a first preselected weight of composite angle-fiber-and-resin material around the mandrel to form a core of angle-fiber-and-resin material for the first shaft, and wrapping a second preselected amount of composite longitudinal-fiber-and-resin material around the mandrel and said first are to form a first shell of longitudinal-fiber-and-resin material for said first shaft for determining the stiffness profile of the first shaft;

producing at least a second shaft on the mandrel having a different weight and the same longitudinal stiffness by wrapping a second preselected weight of composite angle-fiber-and-resin material different from said first preselected weight by a preselected increment of weight around a different portion of the mandrel spaced a different predetermined distance from the tip end of the mandrel to form a second core of angle-fiber – and-resin material of said second core of angle-fiber-and-resin material of said second preselected weight for the second shaft, having an outside surface of different size than the first core, and wrapping said second preselected amount of composite longitudinal-fiber-and resin material around the mandrel and said first core to form a second shell of longitudinal-fiber-and-resin material for the second shaft for determining the stiffness profile of the second shaft, said predetermined distance being calculated to change the outside surface of

the second core to the same size as the first core, thereby to produce the same longitudinal stiffness profile for the second shaft.

8. The method as defined in claim 7 wherein the first shaft is produced on said mandrel relatively close to the tip end of the shaft, and said second preselected weight is less than said first preselected weight, whereby the second shaft is wrapped around the mandrel a greater distance from said tip end to compensate for the reduced amount of angle-fiber-and-resin materials in the second core.

9. The method defined in claim 8 further including the additional steps of producing a third and successive additional shaft of the family having successively lighter cores beginning progressively farther up the taper profile to compensate for the reductions in the amount of angle-fiber-and-resin materials.

10. The method of producing a family of tubular golf club shafts having the same longitudinal stiffness profile and different weights, including the steps of:

producing a first shaft by forming a first preselected weight composite of angle-fiber –and-resinmaterial about a first portion of a selected taper profile to form a core, and forming a second preselected amount of composite longitudinal-fiber-and-resin material around the first core to form a shell of the longitudinal-fiber-and-resin material for determining the stiffness profile of the first shaft;

producing at least a second shaft by a different position of the same taper profile by forming a second, different preselected weight of composite angle-fiber material about said different portion of the same taper profile by forming a second, different preselected weight of composite angle-fiber material about said different portion of the taper profile and forming

the same second preselected amount of composite longitudinal-fiber-and-resin material about said second core into a second shell, said different portion of the taper profile being spaced along the taper profile from said first portion to compensate for the difference in the second preselected amount of core material and maintain the same outside size of the second core to produce the same stiffness profile from the second shell.

11. The method as defined in claim 10 including the further steps pf producing additional shafts having cores of angle-fiber-and-resin composite materials of preselected incrementally lighter weights in spaced positions along said flex profile, and producing shells on said cores composed of longitudinal-fiber-and-resin composite material of said second preselected amounts and spaced along the taper profile predetermined distances calculated to maintain the outside surfaces of the cores at substantially the same outside size in each shaft, thereby to produce the same stiffness profile on each shaft and a weight that varies in accordance with the reduction in angle-fiber-and-resin materials.

12. A family of tubular golf club shafts having the same longitudinal bending stiffness profiles and incremental differences in weights, each of said shafts comprising:

a shell of composite longitudinal-fiber-and-resin material having a preselected amount of longitudinal-fiber-and-resin material for producing said same longitudinal bending/stiffness profile in each shaft of the family;

and a core composite angle-fiber-and-resin material for producing torsional stiffness in said shaft and having a preselected weight of the angle-fiber-and-resin, the preselected weight of angle-fiber-and-resin material in each shaft of said family being different from the preselected weights in the other shafts of the family to establish the incremental differences in the weights of the shafts;

the core of each shaft having an outside surface that is maintained substantially the same size to maintain the same size shell in each shaft.

13. A family of golf club shafts as defined in claim 12, wherein said shafts are of the same predetermined length and have inside surfaces that taper along a selected taper profile longer than said predetermined length from a larger butt-end portion of the taper profile to a smaller tip-end portion of the taper profile, and each lighter shaft of the family of the family taper has an inside surface that is closer along the taper profile to the butt-end portion than the interior surface of the next-heavier shaft, by a distance sufficient to compensate for the difference in the angle-fiber-and-resin material.

14. A family of golf club shafts as defined in claim 12 wherein the incremental differences in weights are substantially the same from the heaviest of said shafts to the lightest.

15. A family of golf club shafts as defined in claim 14 wherein the family comprises six shafts ranging in nominal weight from a lightest shaft approximately fifty-five grams to a heaviest shaft of approximately one hundred and five grams, each increment being approximately ten grams.

16. A family of golf club shafts as defined in claim 14 wherein said taper profile is a substantially uniform taper in said tip-end portion, and the heaviest of said shafts has a tip end having an inside surface with a diameter formed by the smaller end of the taper profile, and each incrementally lighter shaft has a tip end having an inside surface with a diameter formed by the diameter of a larger portion of the taper profile.

17. A family of golf club shafts as defined in claim 16 wherein said taper profile is a substantially uniform taper in said tip-end portion, and each incrementally lighter shaft has a tip end spaced along the taper profile a predetermined distance from the tip end of the next heaviest shaft.

18. A family of golf club shafts having the same longitudinal stiffness profile and different weights, each of said shafts having:

a tapered tubular shell of composite longitudinal-fiber-and-resin material comprising a preselected amount of longitudinal-fiber-and resin material and the same size for producing the same longitudinal stiffness profile in each shaft; and

a tapered tubular core of composite angle-fiber-and-resin material having the same outside size to support the shell of longitudinal-fiber-and-resin material, the cores of the shafts of the family of shafts having different weights of the angle-fiber-and-resin material producing different overall weights of the shafts of the family.

19. A family of golf club shafts as defined in claim 18 wherein the cores of the shafts have the same outside size and shape and inside sizes that are reduced in size for each incremental change in weight.

20. A family of golf club shafts as defined in claim 18 wherein the cores of the shafts have the same outside size and shape and an inside surface that is a different portion of the same taper profile, thereby to maintain the same outside shape with different amounts of the angle-fiber-and-resin material.